the Federal Government should be secured and official status for the Reserve should be established by publication in the Official Government Gazette issued by the Ministry of Justice.

4.2. Maintenance and Protection

To carry out the reserve objectives will be the specific task of the Department of Forests and Range, which in the past was undertaken by the Afghan Tourist Organization. Activities should include complementary objectives aimed at maximizing the productivity of the wild ungulate population so that it will retain characteristics of a healthy, socially active population with high reproductive rates, rapid growth, large body and horn size, and a short life expectancy. This will insure the production of many high quality trophies essential to the continued success of the hunting programme. It can only be effected, however, by improving habitat quality within the Reserve. Habitat quality, as emphasized previously, is the ultimate cause of the differences between the Marco Polo sheep in the Reserve and in the Small Pamir. By focusing management activities on the ungulates and on rangeland, the less obvious components among the mammalian population, particularly the carnivores, will benefit and thrive so that a healthy balance can be attained.

4.2.1. Management Activities

The first goal of management activities within the Reserve should be directed towards solving the problem of over-utilization of rangeland in the lower reaches of the reserve valleys. Caughley (1970) pointed out that rangeland in the lower sectors of the Reserve was less verdant than the areas nearer to the valley heads. He further stated that should the female population show signs of dropping in numbers steps would have to be taken to reduce quantity of domestic stock pastured. In the following year, Petocz (1971) made specific recommendations for grazing restrictions that would

lessen the intensity of pasture use in the four-valley area. Comparative studies in the Big and Small Pamir confirmed that the reserve population displayed disturbing trends within the female sector of the sheep population. However, grazing restrictions were not implemented as suggested and habitat exploitation has intensified in areas which were already under severe use by domestics. While protection of rangeland in valley heads during the Afghan Tourist Organization hunting season has had favorable effects on plant production there, it has also served to concentrate and isolate domestic stock on the more fragile alpine steppes in the lower part of the valleys, causing undesirable intensification of land use in these areas. It is now essential that restrictions on range use by these domestic animals be phased in to rectify this situation. Because the hunting programme takes place at the only time of year when valley heads are accessible to domestic animals, it becomes impractical to lessen pressure on the lower ranges by moving domestic stock into these areas. These upper parts of valleys could easily stand more grazing activity than is currently accomplished by the wild sheep, but it is not feasible to have disturbances in the immediate hunting regions for obvious reasons. With a cancelling of this option, the alternatives are to change the hunting season which would allow both wild and domestic stock access to the valley heads, or to reduce domestic stock numbers in a phased approach, while maintaining a monitoring system of the rangeland. The latter idea was accepted by the Afghan Tourist Organization in 1973, but plans to reimburse local peoples in exchange for their traditional grazing rights were not carried out. The presidents of the Department of Forests and Range and the Afghan Tourist Organization are encouraged to discuss the possibility of a financial settlement with the local Wakhi people which could be absorbed by revenues gained through the actual hunting programme. This line of discussion is pursued under Section 4.6. A suggested action plan is presented below which will bring relief and an eventual cure to the problem of over-exploitation.

1. Domestic animals sold to peddlers in transit to market should be denied entry to the reserve confines. Movement of market stock east of the Reserve should be routed along the reserve periphery along the Pamir River. As market stock is usually taken out of the Pamir during late summer, there should be no danger or difficulty in crossing the Wakhan River, which in spring and early summer is impassible. There is no bridge over the Wakhan River at its mouth near Gaz Khan. When the bridge at Sust is reconstructed, then domestic stock can be taken from the Pamir by this route during most seasons of the year.

2. With this phase successfully completed, the remaining domestic animals of local Wakhi people should be ideally phased out over a three-year period. The elimination of domestic stock from the Reserve should be accomplished in conjunction with rangeland monitoring by a qualified ecologist. His reports should form the basis for any alteration in the programme.

3. The Marco Polo sheep population, particularly the females, should be closely monitored over the next years, with emphasis on reproduction and survival, and parasite load. Additionally, post mortem examination of rams shot by guest sportsmen should be done by a qualified veterinarian as a matter of course in a procedure outlined by Woodford (FAO, 1974, Project Field Document No. 4). This valuable source of data has not before been exploited. Most sportsmen are avid supporters of big game studies and would be pleased to help supply data which would lead to more knowledge and a better understanding of the species. This stipulation could be written into the hunting contract. Veterinarian assistance can be provided through the FAO Animal Health Project which is working with the Ministry of Agriculture.

4. The ram component of the sheep population should be monitored, particularly with respect to the numbers and characteristics of trophy animals. Yearly recommendations should be made to the Afghan Tourist Organization regarding annual allowable harvest and availability

of large trophy rams. Studies conducted on the rutting behavior of Marco Polo sheep in the Small Pamir indicated that the removal of the oldest males (i.e., trophy rams) from the population has no real effect on breeding, and therefore can continue, even if these rams are removed from the population prior to participating in the rut (Skogland and Petocz, 1975).

5. The carnivore populations in the Reserve should be allowed to remain at their present level, in the absence of data to the contrary. With elimination of unlicensed hunting in the Reserve, it can be assumed that remains of animals other than those harvested by tourist-clients are results of predation. A close search for animal remains, particularly those of rams, on a yearly basis will therefore yield important information on wolf harvests and sex-age classes effected the most by predation. Any manipulations of the predator population would depend strictly on the interpretation of these data.

6. Efforts should also be directed towards investigations of the ibex population with a view to managing this species along with the sheep.

4.2.2. Protection Activities

The first hunting restrictions on local people in the reserve area were established nearly two decades ago by order of the former king. With little exception, these restrictions have been maintained and obeyed and should not be changed. Hunting of any kind in the Reserve should be forbidden, unless there is prior approval from the Government. Violators should be dealt with strictly and firmly, and censored by fine in proportion to the offense committed.

The possession of firearms in the reserve area by unauthorized people should be prohibited. Most local people are too poor to own firearms so this represents no real hardship. The shooting or harvesting of any wildlife in the Reserve must require a permit issued by the Afghan Tourist Organization.

The harvesting of peat from the sedge meadows in valley bottoms of the Reserve has never been extensive and should be permitted during the gradual phase out of seasonal occupancy of the human population. Uprooting of Artemisia shrubs by seasonal inhabitants can be expected to continue during the phase-out period. It is totally impractical to ban this practice as steppeland shrubs are the only kindling fuels available in the high Pamir region. They are as essential to lighting a fire as the fire itself is to the well-being of the people that live in the region.

4.2.3. Protection Personnel

The posts of protection personnel should be filled from the ranks of forestry technicians that have returned from training at the school of the Department of Environment, Iran, However, it is emphasized that these posts should be established in concert with the activities of the Afghan Tourist Organization and with the complete understanding of local people. Initial meetings in Kabul must be followed up by additional meetings with village leaders in the Wakhan to explain the intentions of the Government, the purpose of the Reserve, and the basic work programme of the government protection officers. It is furthermore important that the Provincial Government has full knowledge of the role of these officers and that both recognize and support their authority as the representatives and implementers of policy of the Federal Government. This will require prior discussions between the President of the Department of Forests and Range, or his appointed representative, and the Provincial Governor in Faizabad. At this time the Reserve itself as a source of pride for the province, and the management objectives and necessary action plan to be implemented in the area by the Department should be explained in detail. Only after the meetings and discussions described above should the protection officers be assigned to their posts. If the team is to function in this remote area, it must be supported by authority and the good-will of the local populace, so that

misunderstandings in the field can be avoided. The officers stationed in the field should have full logistic support from the Department of Forests and Range and an adequate budget and transportation facilities to assure their effectiveness and comfort in the field.

It is obvious that officers cannot be stationed in the Pamir Mountains on a year-round basis. Even for the experienced local residents who live in the area of Alisu Valley during winter and early spring, life in the Pamir is extremely difficult and marginal at best. Officers should be posted in the spring, in early May, and removed from the area at the end of the hunting season, late in October. Instructions to officers should be given during the first month in the field by project staff to acquaint them with the Reserve and aspects of information gathering. A specific work programme for these officers should then be formulated.

In winter, the protection of the reserve area should be carried out with the assistance of the Provincial Government and Ministry of Interior. The representatives stationed at Qala-i-Panja should assure that once grazing of domestic animals is phased out, no infringements will occur in former wintering areas near the mouths of reserve valleys. This might be accomplished in cooperation with the military who are aware of all human activity in this area. A single check before winter snowfall closes the route along the Pamir River would be the only activity necessary, as any traffic after that along the Pamir River would not escape the military outpost at Gaz Khan, which lies at the northeast corner of the junction of the Wakhan and Pamir rivers.

4.3. Utilization by the Public and Government

4.3.1. The Marco Polo Sheep Hunting Programme

The Marco Polo sheep are a renewable resource with a tremendous economic potential that is annually realized from their controlled harvest by paying guests of the country. The tariff for a single hunt rose from

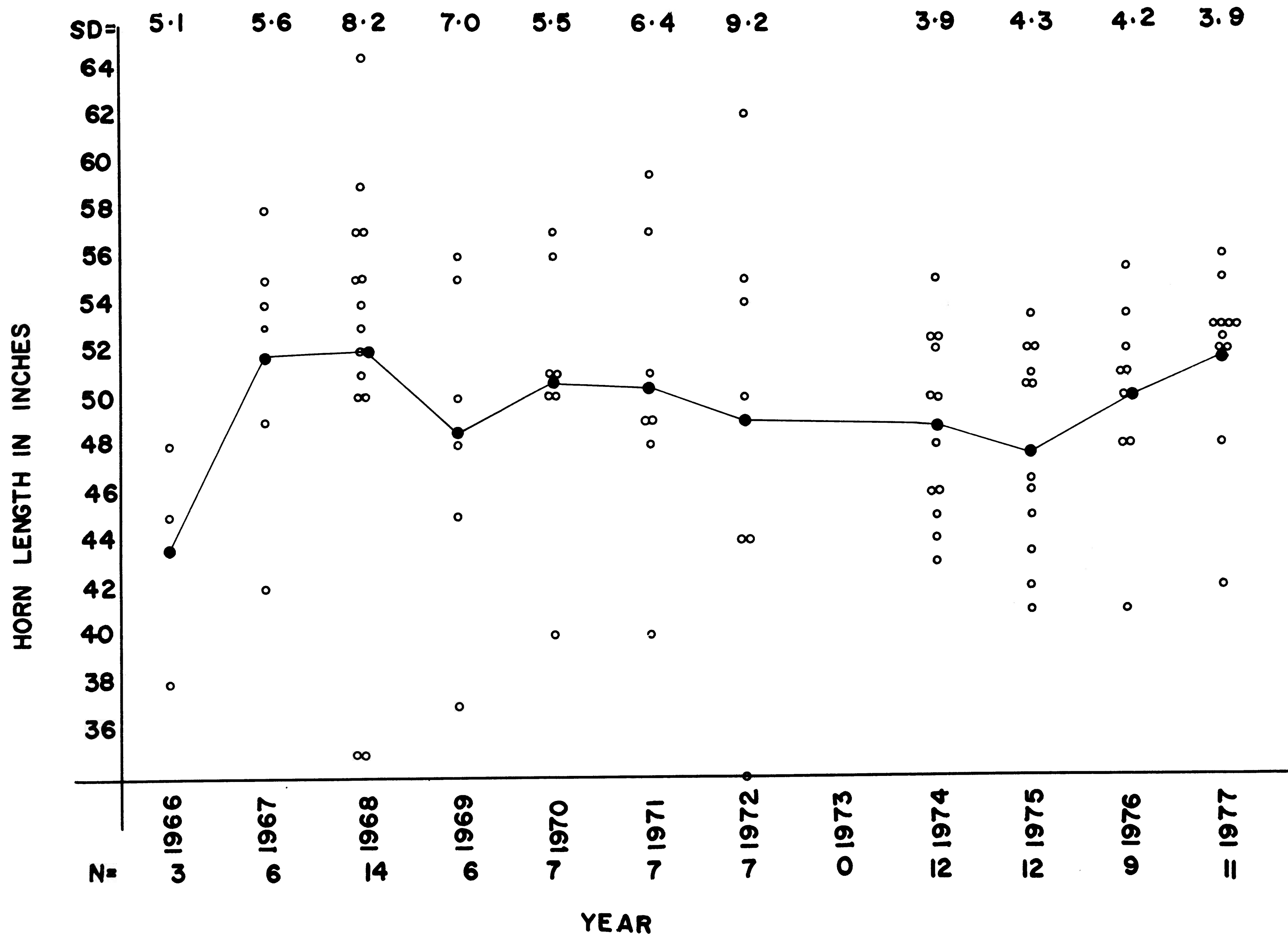


Figure 5. Horn lengths in inches of Marco Polo sheep rams harvested by tourist hunters in the Big Pamir Wildlife Reserve between 1966 and 1977. (N - number harvested; SD - standard deviation.) Data courtesy of the Afghan Tourist Organization.

$6,200 in 1971 to $13,000 in 1975, which is the current charge. Similar hunts for argali sheep (Ovis ammon ammon) in Mongolia run about $10,000. The current profit on these hunts in Afghanistan is over 75%. The Afghan Tourist Organization accepts 12 hunters annually, requires advance payment, and guarantees 12 days of hunting, whether or not a trophy is obtained. Hunters may obtain additional time at a per-day charge of $275. Booking arrangements are handled exclusively by an American-owned company, Klineburger Brothers Safari and Expedition outfitters of Seattle, Washington, who charge a 10% commission on each hunt, and retain rights to taxidermy and trophy preparation. Thus far, the arrangement has worked to mutual advantage, and no difficulties have been encountered in filling the hunting schedule. The hunts are now well-managed and every effort is made to assure that each client is successful. Marco Polo sheep are regarded as prestigious trophies in the world of sportsmen and expectations of individual hunters are high, as is the tariff. This should be realized so that every consideration is given to managing the wild sheep population, to assure that an adequate number of quality, that is, large, trophy animals is available for the annual harvest by guest sportsmen. The maintenance of quality trophy rams is of utmost importance to the continued success of the programme, if the economic potential for these animals, currently the highest in Asia for any wild ungulate species, is to be kept at the present level.

A graph showing the mean trophy horn length and distribution of horn sizes of animals harvested since the inception of the hunting programme is reproduced in Figure 5. The data show that the largest animals harvested have declined. Secondly, the number of rams shot annually has increased since 1974, while the variation in horn lengths has decreased. Thirdly, the mean trophy size decreased from 1966-1975, whereas it has shown an upward trend in the past two years.

These trends allow for valuable interpretation. First, the greater hunter success and decrease in horn size variability points to improved management of the hunting programme by Afghan Tourist Organization personnel and, in particular, a higher quality of guiding which has allowed hunters to

take the largest animals available. Secondly, the decrease in horn size of the largest trophies taken annually might be interpreted as resulting from the very intensive harvest of the largest animals in the population, shot before they reach supertrophy size. An alternate explanation for this trend is that increasingly poor winter range conditions for rams in the first few years of life have resulted in developmental priorities excluding the luxury of exceptional horn growth. These trends need to be monitored closely over the next few years. This can be accomplished easily by recording accurate measurements of the horn lengths of trophies and their respective ages. Should a drop in trophy size become evident with hunters shooting more 8-year-old animals, it may be necessary to reduce offtakes of trophies to allow a build up in the number of older individuals in the population. The gradual improvement of range conditions in lower valley reaches will help to maximize horn growth in the first four years of an animal's life when young rams are attached to female bands that are more confined to this section of rangeland.

The conservation of Marco Polo sheep with management directives aimed at maintaining the population and trophy quality are the Government's major economic reasons for interest in the Reserve. At this time, the hunting programme is the primary tourism activity in the Reserve, but programming tourist activities should be subject to modification if it is necessary. For the present, the annual harvest of 12 animals should continue.

An important point regarding the size and dimension of trophy ram horns should be mentioned here. There are three different morphotypes of Marco Polo sheep horns which can be readily distinguished in adult animals. The first are the more typical long and wide-flaring horns prized by hunters; the second are shorter and tighter curled; and the third are the attenuated horns of rams who have lost a significant portion of their horn length by a special type of brooming described in Part 2 (FAO, 1978, Project Field Document No. 6) of this report and Petocz and Shank (in prep). The percent of each of these types in the population is not known and therefore cannot be calculated when estimating annual harvest. Annual allowable

harvest is based on the number of animals of the Class IV category (8 years old) that is present in the population. Careful attention to these parameters in census techniques may permit a more sophisticated estimate of "trophies" within this age class.

One comment can be offered with regard to the actual hunting operation. The maintenance of spike camps in Sargaz and Abakhan valleys in addition to the main base camp in Tulibai Valley, enables a more efficient coverage of the reserve area and should be continued. These camps can also serve as warden posts from which grazing activity of domestic stock can be controlled. They should, however, be connected by a simple radio network that can report hunting prospects to base camp in a more efficient way. Information can be easily monitored by the larger radio, linked with Faizabad and Kabul, always operating in the base camp.

4.3.2. Trekking and Other Forms of Recreation

During the hunting season, it is not possible to offer other forms of recreation that infringe on the hunting area in the upper parts of the reserve valleys lest they interfere with the distribution of wild sheep. These activities should therefore be encouraged in other parts of the Pamir area to avoid any overlap. The Afghan Tourist Organization should consider trekking and sightseeing routes along the Wakhan Corridor into the Small Pamir which would stimulate the rural economy in even more remote parts of the Pamirs.

4.3.3. Research

Scientific investigations of an ecological nature should be encouraged in the reserve area and can be permitted in the lower valley reaches of the Reserve during the hunting season, and throughout the Reserve proper outside of the tourist hunting season. Results of these investigations, particularly

in the early stages of reserve development, are extremely useful to planners in formulating management policy.

4.4. Physical Development

4.4.1. Reserve Building Programme

The construction of a lodge to accommodate the hunting operations has several times been discussed by the directors of the Afghan Tourist Organization. This lodge could also serve as a warden station for officers of the Ministry of Agriculture outside the hunting season, as well as store house for expedition equipment which must now be transported to and from base camp during each hunting season. The building should harmonize with the environment, and at the same time be durable enough to resist the rigors of the climate, as well as destruction by carnivores, rodents, and scavengers. Such a building creates an atmosphere of permanence and concern for the area which will be understood and accepted by the local people.

4.4.2. Road Construction

Outside the reserve area, the (sometimes) motorable road from Ishkashem to Qala-i-Panja, particularly the stretch of about 35 kms from the village of Pegish to Panja is difficult, and in places dangerous especially during the flooding season from late June to August. More permanent bridges across streams draining the Hindu Kush mountains which intersect the road are required at the villages of Pegish, Khundud, Ishmurk and Qala-i-Panja, to mention the worse areas. Accessibility to the reserve area must be more certain and safe to insure a timely implementation of the hunting programme. Consideration should be given to repairing the bridge over the Wakhan River at the village of Sust and completing road repairs along the Wakhan River to

1. INTRODUCTION

This report is the third of a three-part investigation on the Afghan Pamir. Part 1, Ecological Reconnaissance, and Part 2, The Biology of Marco Polo Sheep, have been published in Kabul simultaneously as Project AFG/74/016 Field Documents Nos. 5 and 6. Collectively they represent a synthesis of five seasons of field work in the area between 1971 and 1976.

The Big Pamir Wildlife Reserve, although not yet formally gazetted by the Government, represents Afghanistan's best effort to utilize and protect its wildlife. Centered around a very profitable hunting programme for Maroo Polo sheep (Ovis ammon poli), the suggested reserve area should eventually encompass approximately 67,938 hectares. The government hunting-reserve programme for Marco Polo sheep in the Pamir has reached a stage in its development where careful consideration must be focused on maintenance of the reserve land and its fauna. The deterioration in rangeland in the lower valley reaches of the Reserve is a result of grazing restrictions on domestic stock during the hunting season, and now threatens both the sheep population and the socio-economy of the region. Any neglect in management now will have far-reaching effects on the ecology of the Reserve, and most likely on the hunting programme. It is therefore essential to have the Reserve legalized as soon as possible and to begin to implement a management programme in the area that will ameliorate the present situation. At the same time it is necessary to create an atmosphere where recovery will lead to improvements that can be perpetuated throughout the life of the Reserve. This paper provides sound guidelines for this endeavor.

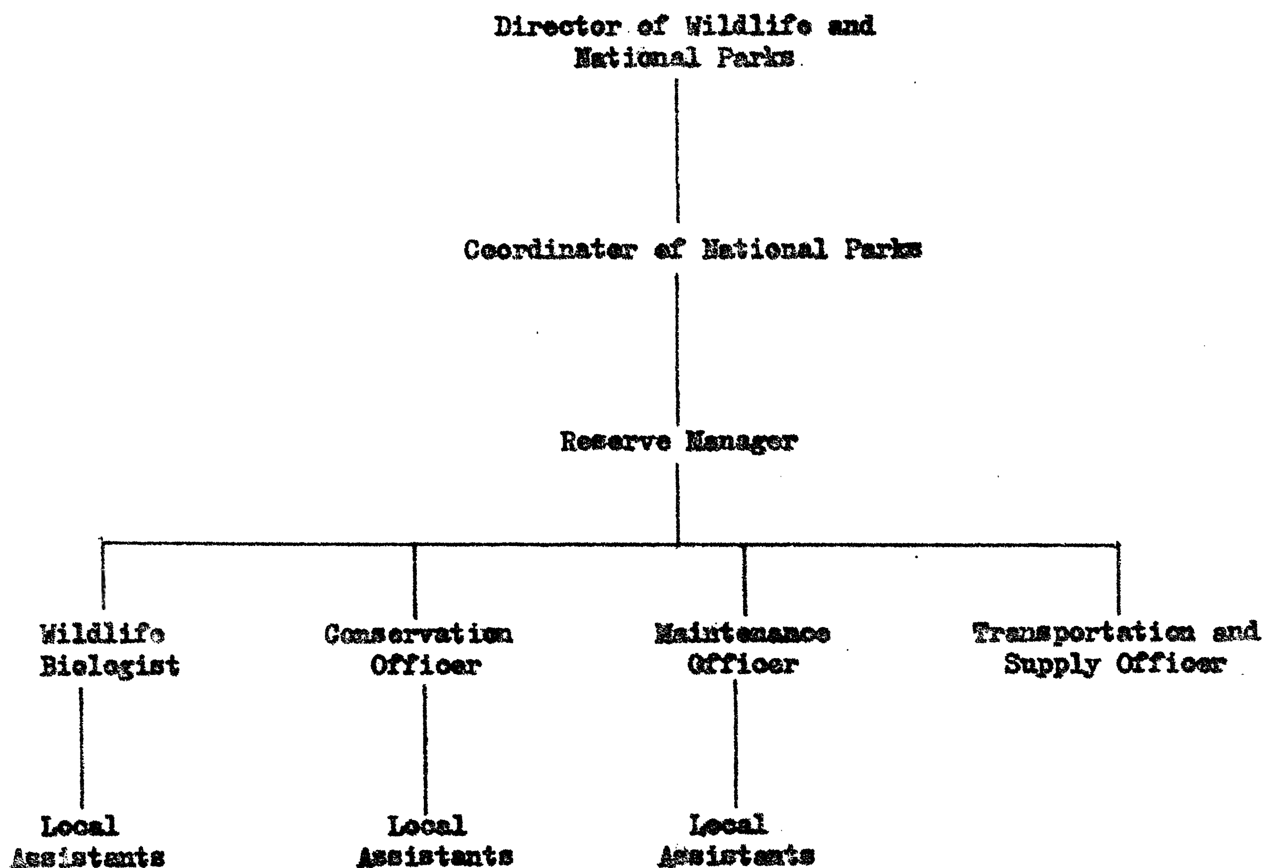


Figure 6. Schematic representation of a proposed infrastructure for the administration of the Big Pamir Wildlife Reserve.

the village of Sargaz. If accomplished, this would eliminate a full day of travel by horseback en route to the Reserve. A survey of the construction needs has already been made by UN experts working with the Department of Rural Development, and should be consulted.

4.5. Reserve Administration

The administration of the Reserve should be the responsibility of the Directorate of National Parks and Wildlife, Department of Forests and Range, Ministry of Agriculture. The flow chart in Figure 6 presents a suggested infrastructure for the administration of the Reserve, and is only one of several which might be proposed. This should tie in with the functional infrastructure proposed for the Directorate of National Parks and Wildlife such as that suggested by FAO, 1976 Afghanistan Final Report.

The reserve manager is the Director of the Reserve and leader of the reserve staff, who will integrate protection, management and maintenance into reserve administration. He is responsible for the efficient functioning of the Reserve and facilitating the work plans of biologists, conservation officers and transport officer.

Conservation officers will have as their main duty the upholding of reserve grazing restrictions and the elimination of all non-authorized hunting. They will also be asked to monitor specific biological activities in the Reserve which fall within their level of competence.

Biologists will perform specific tasks necessary for the annual assessment of the wildlife (particularly the sheep and ibex) and rangeland within the Reserve. The results of these studies will be submitted to the reserve manager for decisions on policy changes or changes in ungulate harvests. Recommendations adopted can then be passed onto the Director of National Parks and Wildlife for approval as departmental policy by the president of the Department of Forests and Range. Subsequently they will be passed on to the Afghan Tourist Organization and officials of the Provincial Government, and thereafter be implemented.

The maintenance officers will be responsible for the posting of signs and general cleaning at old aylok sites. They will report on road and trail conditions leading to and from the Reserve and will have a liaison with the Department of Rural and Public Works to instigate necessary work to improve access to the Reserve. They will be responsible for the upkeep of all reserve expedition supplies and animal transport required by reserve officers.

The transport and supply officer will be responsible for insuring that vehicular transport, provisions and supplies are made available for on-duty reserve officers. The scheduling of reliable transport from Kabul to Qala-i-Panja and return will require coordination with the Ministry motor pool. It is extremely important that officers are not stranded and are kept supplied with necessary provisions on a scheduled, periodic basis. This supportive assistance is the key to the efficient functioning of these men in the field.

4.6. Problems of Local People

With the development of the Reserve, hardships have been placed on those local people who have traditionally utilized valleys in the Big Pamir to seasonally graze their domestic animals. Considerable thought was given to their dilemma before suggestions were made to phase in restrictions which would eventually eliminate domestic stock from the reserve area. The ban on hunting Marco Polo sheep and ibex in the Reserve instigated more than 20 years ago was acceptible mainly because no hardships were felt by the majority of local people. Arms and ammunition are almost non-existent in the region and are beyond the financial means of most people. The grazing restrictions begun in the upper part of Tulibai Valley were likewise accepted as this represented a relatively small part of the pasturland did not effect too many domestic animals. Furthermore, this restriction received support from a large portion of the inhabitants employed during the hunting season as it allowed them to acquire a considerable economic advantage from salaries

paid to them by the Afghan Tourist Organization. Additional programmes begun by the Afghan Tourist Organization, such as free medical facilities during the hunting programme, and distribution of clothing and school materials at the villages of Babatangi in the Wakhan Valley and at Qala-i-Panja, provided further respect for the endeavors of the Afghan Tourist Organization in the Reserve. However, onlypartial success was achieved in enforcing grazing restrictions beyond Tulibai Valley. Overcrowding of livestock on a smaller portion of the remaining rangeland has caused the present overgrazed state in the lower parts of reserve valleys. The fact is that there are too many domestic animals and insufficient pasture when the reserve valley heads are closed to their use. The deterioration in the quality of rangeland in the lower parts of the reserve valleys has in turn effected the female segment of the wild sheep population, as was discussed previously (FAO, 1978, Project Field Document No. 6).

Larsson (1977, pers. comm.) has argued that elimination of all domestic stock from overgrazed rangeland is not always a necessary prerequisite for range regeneration and improvement, a philosophy to which I also ascribe. It is ecologically acceptible to reduce stock numbers to achieve better range conditions, but sociologically the prerogative to allow some folk to stay while relocating others may not be acceptible to the Wakhi people. On the other hand, to allow all residents to remain while trimming their domestic stock numbers may also be unfeasible. Most of the domestic animals pastured in this section of the Pamir belong to relatively few individuals who are among the wealthier members of the villagers. Wealth here is indicated by numbers of domestic animals owned. Reducing animal flock sizes while continuing to allow the people pasture rights would reduce their prestige, respect and social position within the villages involved. In effect what is offered in such a proposal is the right to remain while reducing status, position, influence and self respect. Humilation suffered by individuals effected by such restrictions breeds resentment, and would eventually disrupt harmony in the area and create possible turmoil in the Reserve itself. I question the morality of this approach and do not support it on ethical grounds.

Referring to Table 1, it can be appreciated that only a relatively small number of people will be effected by the proposed grazing restrictions, not more than 55. The families or individuals employed by the sheep owners (bouys) receive dairy products and wool as payment but do not gain large personal profit from their employment. As they are part of an agricultural pastoral society, an adjustment in their living conditions would not impose an impossible sociological change. However, an increased consumption of locally-grown agricultural products could be expected by those people who would remain on village sites instead of returning to the Pamir once restrictions on grazing came into effect. Surplus grains which are now purchased from the Wakhis by completely pastoral Kirghiz people living farther to the east in the Pamir, may no longer be available for sale or barter. However, these commodities are available at the larger villages of Qala-i-Panja or Khundud which can be reached in one and two days respectively from the Sargaz and Qala-i-Ust village areas. The change-over to reserve restrictions on grazing could therefore be absorbed by most of the people involved without any change in their status in an economic sense.

There are three possibilities in dealing with the problem of domestic animals in the Reserve, involving phasing out or reducing domestic stock. In 1973 meetings were held with the directors of the Afghan Tourist Organization and the president of Civil Aviation and Tourism where grazing rights in the Reserve were discussed. A decision was then made to eliminate domestic animals by purchasing the grazing rights of people in the area from funds derived from the hunting programme. Although this decision was not then implemented, it can be reconsidered now as a distinct possibility. A direct financial settlement with the local people, generous in terms of their economy, would not be costly comparing it with the annual net profit from the hunting expeditions. It would also be an honorable way to deal with the matter, as they would have enough money to relocate in Badakhshan in an area of their choice with the financial capability to pay for new and better land in a similar setting. The second choice would be relocation through the new Government Land Reform Bill where people can be resettled on government land similar to that which they

vacated. However, the modus operandi of resettlement should first be discussed in detail with the Provincial Government and local people. A qualified Afghan sociologist must be consulted and employed to recommend a specific programme for resettlement.

The resettlement of some local inhabitants from the Big Pamir is a delicate situation and if it materializes it is imperative that the matter be handled firmly and justly. Every possibility must be explored to produce the most equitable arrangement for the local people. Misunderstandings in resettling these people will be amplified in the general mood and reactions of the villagers left behind, which could have grave consequences for the Reserve and hunting programme. It should never be forgotten that it is only by the grace and cooperation of the local people that the programme and Reserve have been allowed to function in their present form for the last decade.

Because of the crucial involvement of the local people it is my strongest recommendation that they be given the opportunity to help solve the problem of overgrazed rangeland that now exists in the Reserve. The elders and wealthy of the region should be called together to meet with government personnel who must in detail describe what is now happening in the Reserve. After all the facts are presented, the alternatives of resettlement and phasing out of livestock should then be discussed. The people should be asked for their opinions, and queried on other alternatives which might be considered. Ultimately, and if it is at all possible, a decision made by the local people should be given the highest consideration as a solution to the overgrazing problem in the Reserve.

Brown (1971) has eloquently pointed out that the damage done to rangeland by pastoral peoples is the inevitable result of biological needs and dietetic habits of the people themselves. The problem in the Big Pamir is in part the result of prestige overstocking which would be eliminated by purchasing the rights of the wealthy bouys. It is therefore conceivable that in the future a limited number of domestic stock may be returned to Pamir pastureland. But for now, this matter should be held in abeyance until appropriate data on the

needs of those people who may be permitted to return in the future are determined quantitatively rather than by guesswork. For now, it is necessary that a conservation policy towards the rangeland be adopted which will not degrade personal status of the respected wealthy of the villages who, because of their position, are the guardians of the whole region.

Another serious problem that has existed in the Wakhan for a number of years has become even more evident, especially with those employed in one form or another in the seasonal hunting programme. The Wakhi people have had a history of opium utilization that goes back some 50 years. The influx of hard currency from employment in the hunting business should provide them with an opportunity to better their lot. It is, however, a fact that much of this money is being spent to purchase more opium, which has caused some people in the area to fall to lower forms of human degradation. The Government is well aware of the opium problem is Badakhshan, and plans are underway to build rehabilitation centers in the province to fight this terrible affliction. United Nations experts and bilateral agencies have been working in this field as advisors and will continue their participation in the implemention of this fight against opium. The matter is mentioned here in the hopes that some attention will be focussed on the plight of these Wakhi people living near the reserve area who benefit from the Marco Polo sheep hunting programme.

5. DISCUSSION

The Big Pamir Wildlife Reserve has undergone several significant changes since the area was converted into a tourist hunting site 12 years ago. The expansion of the reserve area with the protection of rangeland in the upper parts of its four major valleys is an example of restrictions that were designed to protect the wild sheep and eliminate interference by humans and domestic animals during ongoing hunts. The restrictions, however, have in part been responsible

for concentrating the grazing activity of domestic stock in the less vardant and more fragile part of the rangeland. As discussed earlier, the range in the lower valley reaches has declined in quality along with the wild sheep population. Grazing pressure on the natural ecosystem should be reduced for long-term survival, which may bring considerable hardship to the local people. This situation requires further clarification.

Prior to the expansion of the Reserve and grazing restrictions, domestic animals had been more disseminated over the whole rangeland area and grazing pressure was less concentrated or localized in lower valley parts. Although the size of domestic flocks has probably increased slightly over the last decade, the human population utilizing the area has remained relatively stable. Alpine steppe, the habitat which is now most over-utilized, particularly in the lower valley reaches, has always been the preferred pasturing zone for domestic sheep and goats. It is the major habitat available in the lower half of the Reserve, but now it has also become the most abused. The degeneration of that part of the range on which the local people have depended for their livelihood until now is a serious problem particularly from the standpoint of its declining carrying capacity.

A section of reserve land has been protected and considerable funds are being generated from the tourist hunting programme that give seasonal employment to some local people. However, several aspects have been overlooked in the management of the Big Pamir Wildlife Reserve. It is fruitful to identify these points here, not that they are unique to this particular region, but because they are all too often overlooked in the conservation movement, particularly in developing countries.

The management of the area as a hunting reserve has incorporated local people when convenient, that is, as guides, hunters and as providing animal transportation, but it has excluded them from traditional grazing areas, so far without full compensation. Secondly, the grazing restrictions now imposed, have acted against the economic interests of the pastoral community which has traditionally used the area. And lastly, the local people have not been adequately informed about the nature of the Reserve and the serious range

problems which now prevail. It cannot be stated strongly enough how important it is to make the local people understand fully the problems involved and to make them aware of the part they can play in solving them. With full understanding, hopefully some initiative may even come from the people themselves. They have not up to now been given any role in the decision making as it effects their lives and the future of their traditional homes. Some of these aspects were brought up during discussions at FAO and IUCN Headquarters when this report was under review. The point which should be stressed is that man is also an important part of the ecosystem. It therefore follows that the needs of the Wakhi people in the Big Pamir area should not go unrecognized. It is unfortunate that so much consideration need be given to relocating local residents at this stage of the reserve development, but it is an avenue to pursue that will relieve pressure on the rangeland providing the approach is acceptible to the Government and local people concerned. Nevertheless, every attempt should now be made to integrate activities of local people into the Reserve or to make adequate compensation for restrictions on their traditional rights. Programmes designed or planned for the area should focus more on rural development and a betterment of the health, education and cultural values of the Wakhi people living in the area. To some extent this line of approach has been pursued. As mentioned earlier, provision of free medicines during the hunting programme along with the distribution of clothing and shoes to the populace, and supplies to the local school children at Qala-i-Panja and Babatangi are positive feedbacks from the hunting programme. But considering the current annual profits from the hunting programme, more investments should be made in the area. The reduction of domestic animal herds will necessitate the development of alternative means of sustaining the population that will involve different life styles and forms of nutrition, for which assistance will likely be needed. Employment of local people in the hunting programme is one immediate alternative. However, it was pointed out that we may be repeating a cycle with the Marco Polo sheep hunt that has been seen before in Africa: the exclusive and expensive safaris catering to a few of the world's wealthy

sportsmen being replaced by sightseeing and cultural tourism (H.E. Eidsvik, 1978, written comm.). Nevertheless, the evolution of tourism in this remote area on the "roof of the world" is likely to progress slowly. The processing of a few tourists on such a programme combined with the high economic returns on initial investment is an ideal situation for the Afghan Tourist Organization which has only developed over the last decade. But as the character of tourism to the Wakhan changes, so will the possibilities for the people. Undoubtedly the road link now under repair to the village of Sargaz in the Corridor will provide yet other possibilities and services for the locals.

Preserving the ecosystem and balancing the needs of the local people with the hunting programme and productivity of the rangeland in the Reserve is without question a major socio-economic issue. The suggestions made in this paper, designed to benefit the rangeland and wild sheep population, should be complemented with programmes of assistance that will likewise bolster the economy and stability of the Big Pamir. These concepts are beyond the scope of this management plan but should be dealt with in the near future to eliminate uncertainty for the rural population. The Big Pamir Wildlife Reserve should exist on a strong foundation that can be viewed as an asset rather than a liability to the people of the country.

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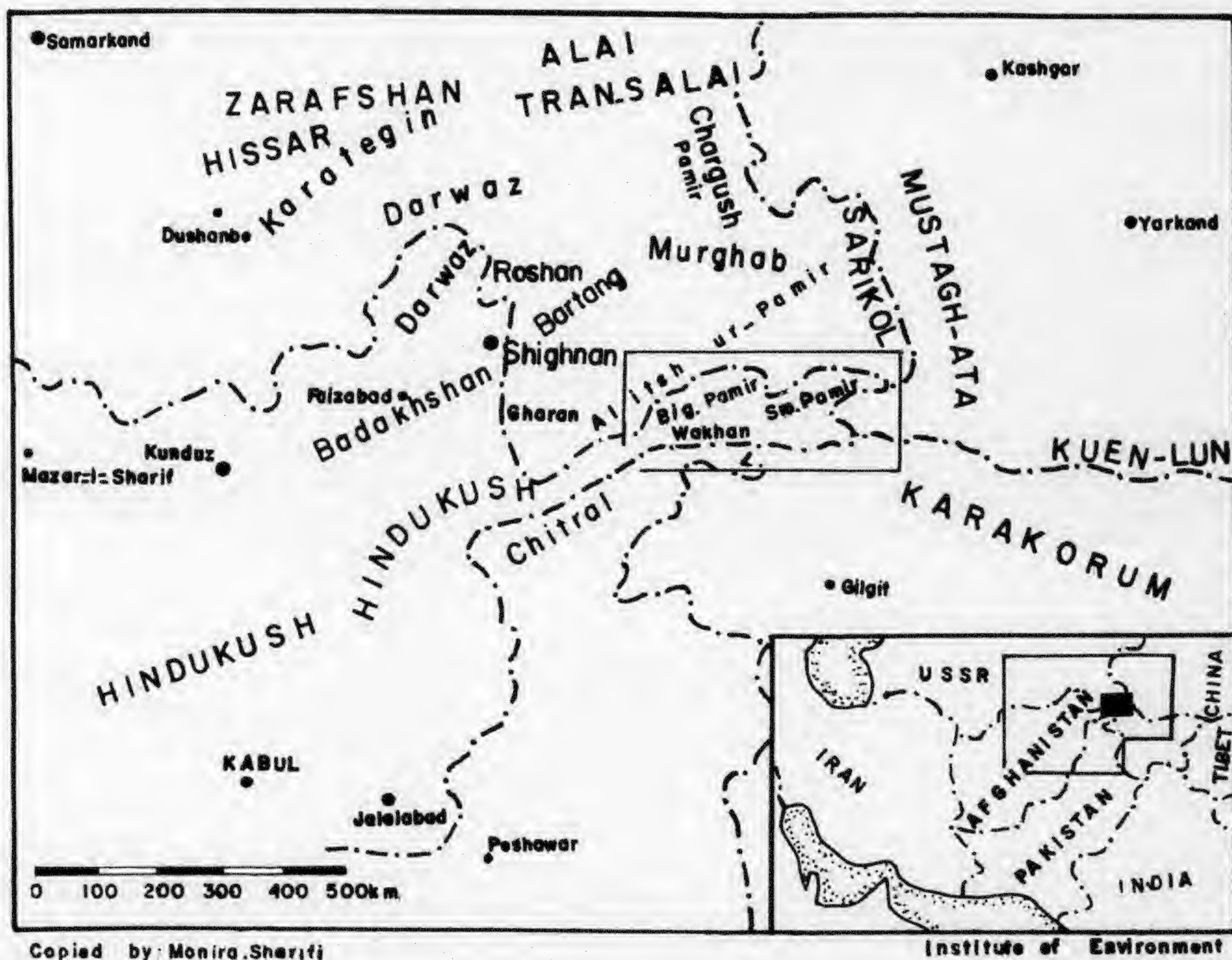


Figure 1. Location map of the Wakhan Corridor and Pamir Mountains (modified after Naumann and Neithammer, 1973).

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Figure 2. Location of the Big Pamir Wildlife Reserve in the Wakhan Corridor. (1-Sargaz Valley, 2 Tulibai Valley, 3-Manjulak Valley, 4-Abakhan Valley)

2. BACKGROUND INFORMATION

2.1. Location

The Big Pamir Wildlife Reserve is located in the western part of the Wakhan Corridor (Figure 1). As envisioned it comprises about 67,938 hectares and includes the four major valleys of Sargaz, Tulibai, Manjulak and Abakhan (Figure 2). Access to the Reserve from Qala-i-Panja is by foot or by animal either along trails which lie adjacent to the Pamir River and the Soviet frontier, or by the more frequented route along the Wakhan River to the village of Sargaz. From Sargaz the trail leading into the Reserve crosses two passes of 3750 and 4710 m respectively, before dropping into Sargaz Valley. From there, Tulibai Valley, the main hunting area and location of the seasonal base camp of the Afghan Tourist Organization, can be reached in an additional half-day journey by crossing a 4530 m pass over the mountain block which separates Sargaz and Tulibai valleys. Either route requires about two and one half days of travel. The route along the Soviet frontier is only used by foreign guests in case of an emergency or if the passes above the Wakhan River are snowbound.

2.2. Regional Analysis

The reserve area which lies adjacent to the Soviet frontier is remote and one of the most difficult areas to reach from the capital city. Before foreign travellers are permitted access to the area, special travel permits must be secured from the Ministry of Interior. Requests must first be submitted to the Ministry of Foreign Affairs which afterwards may request the Interior Ministry to issue the permit. In Badakhshan, these permits must be shown at the capital city of Faizabad, and later to the representatives of the Interior Ministry in Ishkashem, Khundud, and Qala-i-Panja. The entire Pamir area is for

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APPENDIX I

A PROPOSED BOUNDARY DESCRIPTION OF THE BIG PAMIR WILDLIFE RESERVE

The Big Pamir Wildlife Reserve comprises about 67,938 hectares of mountainous and glaciated country in the Wakhan Corridor and lies within the following map coordinates: west, 72°45' longitude; south, 36°55' latitude; east, 73°19' longitude; andnorth, 37°20' latitude. Specific boundary proposals are stated below.

Western Border: Starting from the north at the Pamir River follows the first small valley which lies parallel to the Tulibai (Istmosh) Valley to the west and thence continues southwards along the mountain crest parallel to Tulibai Valley before it drops into the northern-most branch of the Wazit Valley head where it crosses this valley, then continues southwards for about 7 kms along the ridgetop west of a small icefield which drains into the Sargaz (Khoshabad) Valley.

Southern Border: Proceeds from the western boundary at the mountain crest about 5 kms northeast of the village of Qala-i-Ust, then continues eastward south of the icefields of the Big Pamir as far east as the glaciers above the village of Issik.

Eastern Border: Starting from the north at the Pamir River, follows the western flank of the Alisu Valley south-eastwards, then turns southwest for about 2 kms along the Abakhan Valley, after which it follows the divide on the eastern side of Abakhan Valley and crosses the Big Pamir icefield from a marked elevation of 5527 m at the head of Abakhan Valley to a high point in the icefield at 6101 m from where it proceeds for about 10 kms in a

line that continues towards the Issik Valley and the southern border of the Reserve.

Northern Border: The northern border of the Reserve is the Pamir River which extends for about 25 kms between the eastern and western reserve boundaries.

APPENDIX II

PROTOCOL AGREEMENT CONCERNING JURISDICTION OF WILDLIFE CONCERNS IN AFGHANISTAN

The Department of Forests and Range and the Afghan Tourist Organization have reached the following agreement concerning survey and exploitation of wildlife in Afghanistan.

As the wildlife of a country is considered a national resource, it has been agreed that efforts should be made to preserve it in the best possible way. In this regard the Department of Forests and Range will conduct ecological and biological surveys to establish (1) reserve areas and (2) sanctuaries. As a result of these surveys the Afghan Tourist Organization will oonsider possibilities of exploitation and utilization of wildlife in such areas. In this connection the Department of Forests and Range and the Afghan Tourist Organization held several meetings and the following articles where hereby agreed to:

1. All kinds of wildlife, ecological and biological surveys will be conducted by the Department of Forests and Range, Ministry of Agriculture, for the purpose of establishing reserve areas and sanctuaries.

2. All matters related to conservation, protection and study of wildlife (natural resources) within proposed and established reserve areas and sanctuaries will be the responsibility of the Department of Forests and Range, Ministry of Agriculture.

3. Copies of the results of wildlife, ecological and biological survey and construction plans which will take place according to Article 1 and 2 of the agreement will be submitted by the Department of Forests and Range to the Afghan Tourist Organization.

Exploitation programmes prepared by the Afghan Tourist Organization will be made available to the Department of Forests and Range so that close cooperation between the two departments may exist and enable both sides to carry out their programmes cordially.

4. The Department of Forests and Range will annually specify the species and numbers of wild animals that may be hunted. A list of those animals, the hunting of which has been prohibited during the year, will also be submitted to the Afghan Tourist Organization.

5. The Afghan Tourist Organization is the only state agency which has the exploitation and selling rights of wild animals to foreign clients through organized hunting, according to the spirit of this agreement.

6. The Afghan Tourist Organization pledges that it will maintain building structures in reserve areas where it is allowed to carry out hunting programmes in accordance with the allowances of its budget.

7. The Afghan Tourist Organization is responsible for the exploitation of wild animals and will inform the Department of Forests and Range about its results periodically.

8. The Department of Forests and Range will acquaint hunting guides of the Afghan Tourist Organization with conservation programmes applicable to big game hunts, and will provide courses within and outside the country similar to those provided its own personnel.

9. The Afghan Tourist Organization will provide personnel required to run hunting expeditions and will make available a report of the hunting programme at the end of each season so that the numbers of animals taken may be known. The Department of Forests and Range can send an observer to accompany the hunting personnel of the Afghan Tourist Organization.

10. According to a quota set by the Department of Forests and Range hunting licenses will be provided to clients by the Afghan Tourist Organization. The Afghan Tourist Organization cannot exceed the annual allowable harvest quoted by the Department of Forests and Range.

11. Construction of buildings and the establishment of facilities for tourists by the Afghan Tourist Organization in reserve areas can only commence after approval by the Department of Forests and Range.

12. Any form of investment concerning living accommodations which is to take place in reserve areas should be agreed upon by the Department of Forests and Range and the Afghan Tourist Organization.

13. Similarly, the Department of Forests and Range will inform the Afghan Tourist Organization about hunting seasons.

14. Should interpretive difficulties arise concerning this agreement the Department of Forests and Range and the Afghan Tourist Organization will try to resolve the problem through discussions. Should this not be possible the Ministries of Justice and Planning will be requested to make a decision which will be acceptable to both parties.

Note: Wildlife in this agreement refers to all kinds of wild animals and birds.

all practical purposes restricted, which allows complete government control of any tourist traffic to the reserve area. Tourist hunters are guided by the Afghan Tourist Organization. However, scientists, mountain climbers, and members of the diplomatic corps have been granted permission for expeditions of up to 15 persons. The close government monitoring of tourism of any kind to the Wakhan Corridor is one of the factors that will guarantee a rational development of the area as an economically sound investment in conservation in the future. Undoubtedly it will remain for many years a place that only a few privileged foreigners will enjoy. With proper management, the Reserve will continue to provide trophy Marco Polo sheep to the satisfaction of visitor-clients while bringing in a sizable annual profit to the Government and local people that are jointly involved in the hunting programme.

2.3. Land Use and Economy

The high elevations in the reserve area preclude agriculture of any kind. The local Wakhi villagers living along the Wakhan River cultivate wheat, barley and peas, and pasture domestic stock of sheep, goats, yaks, cows, and some horses in and around the area of the Reserve. Most domestic animals are owned by comparatively few of the area's wealthier people (khans or bouys), but a large segment of the male population, some with their families, establish summer encampments (ayloks) in traditional areas within the reserve boundaries (Table 1; Figure 3).



Figure 3. Summer encampment (aylok) in the Big Pamir.

Table 1. Numbers of encampments (<u>ayloks</u>) and domestic stock pastured in or near the Big Pamir Wildlife Reserve.

Location	Identification of Aylok	Estimated no. of people	No. of sheep and goats	No. of yaks and cows	Season of pasture utilization
Sargaz Valley	Dilber Bouy (Qala-i-Ust)	15	1000	100	Summer Autumn
Sargaz Valley	Aligavar (Shaik) (Sargaz Village)	20	300	20	Summer Autumn
Tulibai Valley	**Unknown** (Khundud)	10	1200	about 200	Summer Autumn
Manjulak Valley	Mastali Bouy (Qala-i-Ust)	20	500-1000	50	Spring Summer
Abakhan Valley	Mastali Bouy and Ajiab (Qala-i-Ust)	?	?	?	Summer Winter
Alisu Valley*	Mastali Bouy et al. (Qala-i-Ust)	10		500	Autumn
Alisu Valley*	Mastali Bouy (Qala-i-Ust)	6	500-1000		Winter
Alisu Valley*	various	?	50	50	Summer

NB*: Alisu Valley is not located within the present Reserve. Figures are presented as these stock occasionally use pasturage in Abakhan Valley, a tributary of Alisu, which is a part of the defined Reserve.

In addition to the above numbers of domestic animals, there are about 300-500 sheep pastured in small valleys lying between Tulibai and Manjulak valleys. Besides the animals belonging to the local Wakhi people, peddlers from Kabul and other market centers of Afghanistan purchase domestic animals from Kirghiz and Wakhi people, and during the summer, use reserve lands as temporary pasture sites for animals which are in transit to market. Stock pastured in the Reserve form a large part of the local wealth of villages along a 20 km-stretch of the Wakhan Valley up to the village of Sargaz. Grazing land on the south side of the Wakhan Valley in the Hindu Kush Range is utilized by animals belonging to another part of the human population. The land division follows traditional familial claims, as it does in the Reserve. The grazing land in any part of the country is the property of the Federal Government, however, which reserves the right of eminent domain. In the absence of monitored grazing restrictions throughout the year, except during the activities of the hunting season in the Tulibai Valley, there exist only haphazard grazing restrictions within the Reserve which has resulted in over-grazing of the pasturage in important sections of the range. Grazing restrictions in the reserve area enforced during the hunting season have concentrated domestic stock in the lower valley reaches, resulting in over-exploitation of rangeland. This is a particular threat to the natural ecology of the region and has effected the Marco Polo sheep population in the reserve area. Since there are no alternatives to the socio-economic system existing in this area, management objectives must impose a phased-down approach to the grazing privileges within the Reserve. This poses a problem, the solution of which is closely examined in Section 4.6.

2.4. Regional Transportation System

There is no vehicular transportation within the reserve area. Communication is characterized by trails, and travel is restricted to foot or horse, yak or donkey. A motorable road, at present in disrepair, exists from Qala-i-Panja to

Sargaz village along the Wakhan River. It is now being repaired by manual labor but will be of limited use until the bridge at Sust, washed away by spring floods years ago, is reconstructed over the Wakhan River. The wide plane at Qala-i-Panja has an unpaved airstrip, which has been used in emergencies to evacuate hunter clients who have fallen ill with altitude sickness or pulmonary endema. In spite of the elevation (3050 m), Twin Otter and Sikorsky helicopters are able to land, barring strong winds. It is not feasible to transport foreign guests by air as a matter of course because of agreements between the Afghan and Soviet Governments over air space in the Wakhan district. All visitors to the area must therefore utilize motor transportation from Faizabad to Qala-i-Panja. This road usually becomes impassable during most of the winter because of snow cover, and in the spring it is a treacherous undertaking at best because of glacial melt waters which drain the Hindu Kush mountains and wash away the road. At present access to the Reserve is largely seasonal and sometimes unpredictable.

2.5. Population Characteristics

Besides the settlements along the Wakhan River which account for about 3000 people, the villages of Qala-i-Panja and Khundud are the main population centers near the Reserve. These villages located 38 and 65 kms respectively from the Reserve are the main trading centers in this part of the Wakhan. Khundud has a primitive bazaar, and is also the location of the government wheat distribution and sales center. Although no considerable population growth is expected in these areas, it would in any event have little effect on the Reserve, providing there is no increase in pastoralism which would make demands on pasturage in the Pamir.

2.6. Tourism Services

As mentioned earlier, tourism to the Reserve is limited mainly to guest clients participating in the hunting programme of the Afghan Tourist Organization. The Tourist Organization maintains a fully-equipped base camp in Tulibai Valley during the hunting season; with an additional spike camp in the Sargaz Valley. Many of the recommendations proposed by Petocz (1973) have been incorporated into the organization of the hunting programme which now includes medical facilities and a qualified doctor for tourists and local people who are treated free of charge. The construction of a permanent lodge in Tulibai Valley has been under discussion at the Afghan Tourist Organization. This would also provide a permanent facility for protection officers of the Department of Forests and Range. Below the Pamir in the Wakhan Valley at the village of Sargaz, a facility consisting of two rooms has been constructed in a traditional manner which serves as an overnight stop for visitors en route to the Reserve. It is owned by one of the local hunting guides who is paid a seasonal rent by the Afghan Tourist Organization for its use by client hunters. Other expeditions to the Wakhan have relied on tent housing in portable camps.

2.7. Legal Status of the Big Pamir Wildlife Reserve

The former king granted use of what was then a royal hunting reserve in Tulibai Valley to the Afghan Tourist Organization in 1968. Upon recommendation of Petocz (1971) and later Phase I of this project (Petocz, 1973), the reserve area was unilaterally expanded by the Afghan Tourist Organization. The 67,938-hectare area does not, however, enjoy the legality of formal gazettement by the highest government authority. The Afghan Tourist Organization has the sole authority to exploit the Marco Polo sheep in a programme which has existed for 12 years, and has effected *de facto* control over the area since that time.

3. MANAGEMENT AND DEVELOPMENT

3.1. Statement of Reserve Objectives

The primary objective of the Big Pamir Wildlife Reserve should be to utilize and maintain the ecological potentialities of the area by ensuring that the wildlife, particularly the Marco Polo sheep and Siberian ibex, thrive in an ecological framework in harmony with the human population in the area. This implies that any human usage which manifests a deleterious effect on the wildlife be excluded. Those activities which do not significantly alter the natural ecosystem and which have a neutral or beneficial effect on the wildlife may be permitted. Government programmes in the area should be oriented towards improving the relationship of man and wildlife in the Reserve.

3.2. Reserve Boundaries

The Reserve should include the valleys of Sargaz, Tulibai, Manjulak and Abakhan as announced by the Afghan Tourist Organization. Collectively, these valleys contain major seasonal concentrations of the Marco Polo sheep that occur in the western part of the Big Pamir. Valleys lying eastward of the Reserve for the next 60 kms are either not used at all by wild sheep or at best are brief stopping off areas for sheep moving to their traditional ranges from east to west in the Big Pamir. Physiographically, the boundaries are easily recognizable, and ecologically they encompass the entire traditional range of a large segment of the Marco Polo sheep population. Suggested boundaries are presented in Figure 4. A proposed boundary description is presented in Appendix II.

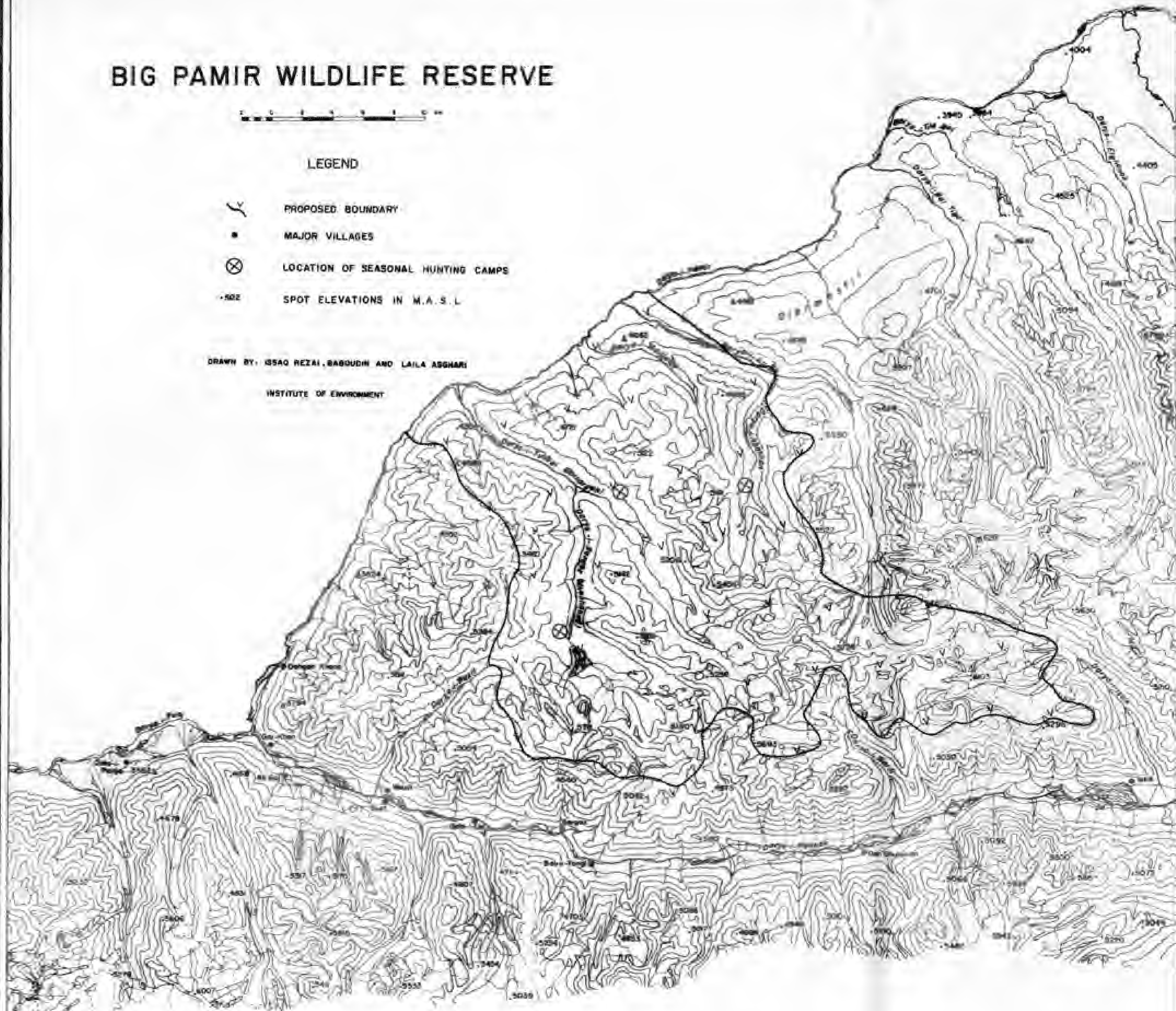


Figure 4. Suggested boundaries for the Big Pamir Wildlife Reserve.

4. MANAGEMENT PROGRAMME

Recommendations for management are grouped under the following major headings: administration, maintenance, utilization by the public and Government, physical development, reserve administration, and problems of local people.

4.1. Administration

4.1.1. Jurisdiction

The Afghan Tourist Organization has the longest history of involvement in the Big Pamir Wildlife Reserve, and it should be congratulated on the expansion of the overall reserve area and its management of the successful tourist hunting programme over the last 12 years. In June 1977 the presidents of the Afghan Tourist Organization and the Department of Forests and Range, Ministry of Agriculture, agreed on a written protocol agreement delineating the responsibilities and objectives of each agency with respect to wildlife reserves and sanctuaries in the country. The text of this agreement is incorporated in Appendix II. It is recommended that agreements defined in this document be implemented by both agencies in the Big Pamir Wildlife Reserve beginning in 1978. Henceforth, activities directed towards protection and management of the Reserve are to be undertaken by the Department of Forests and Range and those of exploitation are to be continued under the authority of the Afghan Tourist Organization. The functioning of the Reserve and the special purpose for which it was created will depend upon the cooperation of these two government bodies.

4.1.2. Establishment of Boundaries and Gazettement

The suggested boundaries in Figure 4, described in Appendix I, should be established as a minimum area encompassed by the Reserve. Formal approval from

ABSTRACT

This report is the third part of a three-part study of the Pamir region. The usual area background information is provided followed by details on management and development. A complete management programme is suggested and is thoroughly discussed under four major headings which include administration, maintenance and protection, utilization by the public and government, and physical development of the reserve area. A special section is devoted to the relationship of the local people to the Reserve.

REPORT ON THE AFGHAN PAMIR

PART 3: A MANAGEMENT PLAN FOR THE BIG PAMIR WILDLIFE RESERVE





FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

Cover: Sargaz Valley in the Big Pamir Wildlife Reserve (elevation of lake 4494 m). Photo by R.G. Petocz.



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Field Document No. 7

National Parks and Utilization of Wildlife Resources

A F G H A N I S T A N

REPORT ON THE AFGHAN PAMIR

Part 3: Management Plan for the Big Pamir Wildlife Reserve

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UNITED NATIONS DEVELOPMENT PROGRAMME
FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
DEPARTMENT OF FORESTS AND RANGE, MINISTRY OF AGRICULTURE

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